Claims

1. A catalyst arrangement for purifying the exhaust gases of internal combustion engines, which comprises an open-pored, porous carrier having an entry surface and an exit surface for the exhaust gas, wherein the entry and exit surfaces of the carrier are coated with different, catalytically active layers, with the catalyst layer on the exit surface being formed by a catalyst for selective catalytic reduction and the catalyst layer on the entry surface being able to store nitrogen oxides under lean exhaust gas conditions and to convert nitrogen oxides into ammonia under rich exhaust gas conditions.

2. A catalyst arrangement according to claim 1, wherein the catalyst layer on the entry surface is formed by a nitrogen oxide storage catalyst.

3. A catalyst arrangement as claimed in claim 2, wherein the nitrogen oxide storage catalyst comprises basic compounds of the alkaline earth metals and catalytically active platinum group metals.

4. A catalyst arrangement as claimed in claim 3, wherein the nitrogen oxide storage catalyst comprises platinum and rhodium on a cerium/zirconium mixed oxide and, in addition, active aluminum oxide and barium carbonate.

5. A catalyst arrangement as claimed in any of claims 1 to 4, wherein the SCR catalyst comprises at least one zeolite exchanged with a transition metal.

6. A catalyst arrangement as claimed in any of claims 1 to 4, wherein the SCR catalyst comprises a solid state acid system selected from the group consisting of titanium oxide or titanium oxide/aluminum oxide or titanium oxide/silicon dioxide in combination with vanadium, vanadium/tungsten oxide or vanadium/molybdenum oxide.

7. A catalyst arrangement as claimed in claim 1, wherein the catalyst layer on the entry surface is formed by a three-way catalyst.

8. A catalyst arrangement as claimed in claim 7, wherein the three-way catalyst comprises at least one noble metal from the platinum group on a high surface area support material and, in addition, at least one oxygen storage component based on cerium oxide.

9. A catalyst arrangement as claimed in claim 1, wherein the open-pored, porous carrier is a wall flow filter.

10. A method of purifying the exhaust gas of internal combustion engines operated under lean conditions with the air/fuel mixture supplied to the engine changing cyclically from lean to rich, wherein the catalyst layer on the exit surface is formed by a catalyst for selective catalytic reduction and the catalyst layer on the entry surface is able to store nitrogen oxides under lean exhaust gas conditions and to convert nitrogen oxides into ammonia under rich exhaust gas conditions.

11. A method as claimed in claim 10, wherein the open-pored, porous carrier is a wall flow filter.